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Asymptomatic bilateral obstructing ureteric calculi resulting in Lactobacillaemia and endocarditis requiring emergency aortic valve replacement

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ABSTRACT

Ureteric calculi are a common cause of emergency presentation to hospitals in the United Kingdom and worldwide. A significant and life threatening complication of those stones that obstruct the ureter is pyonephrosis, bacteraemia and resulting sepsis. Whilst the majority of such cases present with the typical symptoms of loin pain and fever, here we describe the case of a 57 year old patient with asymptomatic bilateral obstructing ureteric calculi that led to bacteraemia from a rare bacterial pathogen, Lactobacillus jensenii, and subsequent severe bacterial endocarditis requiring emergency aortic valve replacement.

Introduction

Asymptomatic ureteric obstruction from renal tract calculi is rare, accounting for approximately 1.1% of all stone cases.[1] However undiagnosed upper tract obstruction can result in serious associated sequelae such as acute and chronic deterioration in renal function, bacteraemia, septic shock and death.

Lactobacilli are normal bacterial commensals of the gastrointestinal tract, vagina and oropharynx and are often regarded as contaminants of microbiology cultures and as such are under reported in literature as causative agents for infections.[2] However, documented cases of clinically significant infection include endocarditis, meningitis, intra-abdominal abscess and urinary tract infection.[3,4] Such infections have been reported in both immunocompetent and immunocompromised patients and whilst only one of 45 patients died directly as a result of lactobacillaemia in one series, 22 died during the hospitalisation in which the bacteraemia occurred, thereby representing a serious potential clinical concern.[4]

Here we present a case of asymptomatic bilateral obstructing ureteric calculi in a 57 year old female patient resulting in bacteraemia from a rare pathogen, *Lactobacillus jensenii*, followed by severe bacterial endocarditis requiring emergency aortic valve replacement.

Case presentation

A 57-year-old woman presented to the Emergency Department with a productive cough of six weeks' duration, rigors and shortness of breath. Her past medical history included hypertension and type II diabetes mellitus. The initial working diagnosis was community acquired pneumonia on the basis that she had previously received multiple short courses of antibiotics (clarithromycin 500mg PO BD for five days) in the community and a CT pulmonary angiogram was negative for pulmonary embolus. She was therefore discharged with a course of oral doxycycline (200mg PO stat followed by 100mg PO BD for five days).

Two days later she re-presented with worsening shortness of breath, oxygen saturations of 92% on room air and a respiratory rate of 22/minute. Routine observations were unremarkable and her temperature was 37.2 °C. An early diastolic murmur, loudest at the aortic area, was auscultated. Chest x-ray showed a blunted right costo-phrenic angle but no obvious consolidation. Electrocardiogram showed old right bundle branch block, left axis deviation and ventricular ectopics. Urine dip testing demonstrated 3+ leucocytes, 1+ blood and 1+ protein but an absence of nitrites. Intravenous antibiotics (amoxicillin 1g TDS and clarithromycin 500mg BD) and a loop diuretic were commenced on the basis of a working diagnosis of ongoing lower respiratory tract infection and congestive cardiac failure.

The patient was referred to the Cardiologists who again identified an

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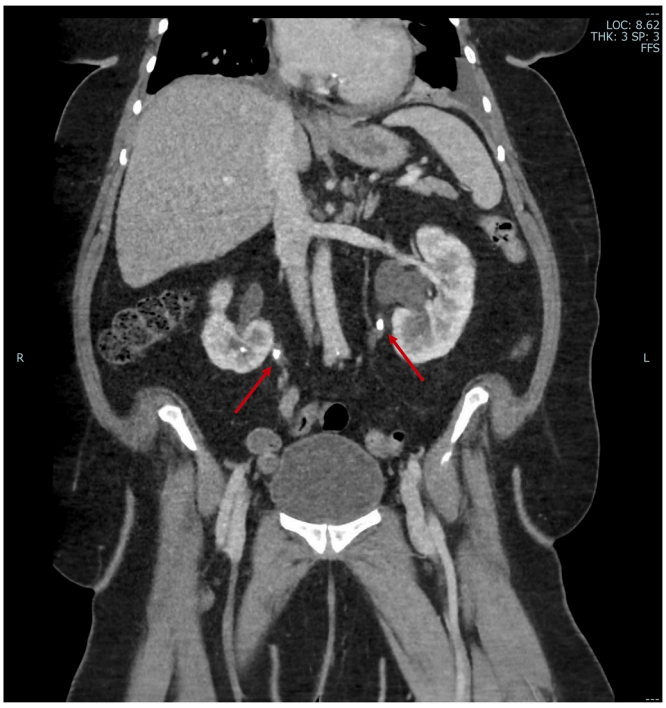

Fig. 1. Coronal CT image demonstrating bilateral upper ureteric calculi (red arrows) with resulting hydronephrosis. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

early diastolic murmur, as well as a collapsing pulse. A trans-thoracic echocardiogram was performed which showed vegetations on the aortic valve leaflets and severe aortic regurgitation, thereby prompting discussion with the regional Cardiothoracic surgical centre for consideration of urgent aortic valve replacement.

Shortly after transfer, the receiving Cardiothoracic surgery team were alerted that the initial blood cultures were positive for the organism *Lactobacillus jensenii*. A CT abdomen and pelvis was subsequently performed which demonstrated bilateral obstructing ureteric calculi (Fig. 1). Urgent urological opinion was therefore sought and the patient underwent rigid cystoscopy and insertion of bilateral ureteric stents under general anaesthetic. There was no apparent vesico-vaginal fistula. Transoesophageal echocardiogram performed under anaesthesia confirmed the findings of the earlier transthoracic study (Fig. 2) and the patient proceeded to immediate aortic valve replacement (Inspiris Resilia tissue aortic valve). The patient made an excellent postoperative recovery and subsequently underwent bilateral semirigid ureteroscopy and stone extraction at an interval of four months later when fully recovered.

Discussion

Given that it is often perceived to be a contaminant of samples, the clinical significance of lactobacillus in microbiological cultures remains a matter of great debate within the literature. However, cases of clinically significant infection such as endocarditis have been reported in both immunocompromised and immunocompetent patients. Although this patient was not systemically immunosuppressed, she did have a history of type II diabetes, which is one of the most common predisposing metabolic derangements leading to infection and reported in up

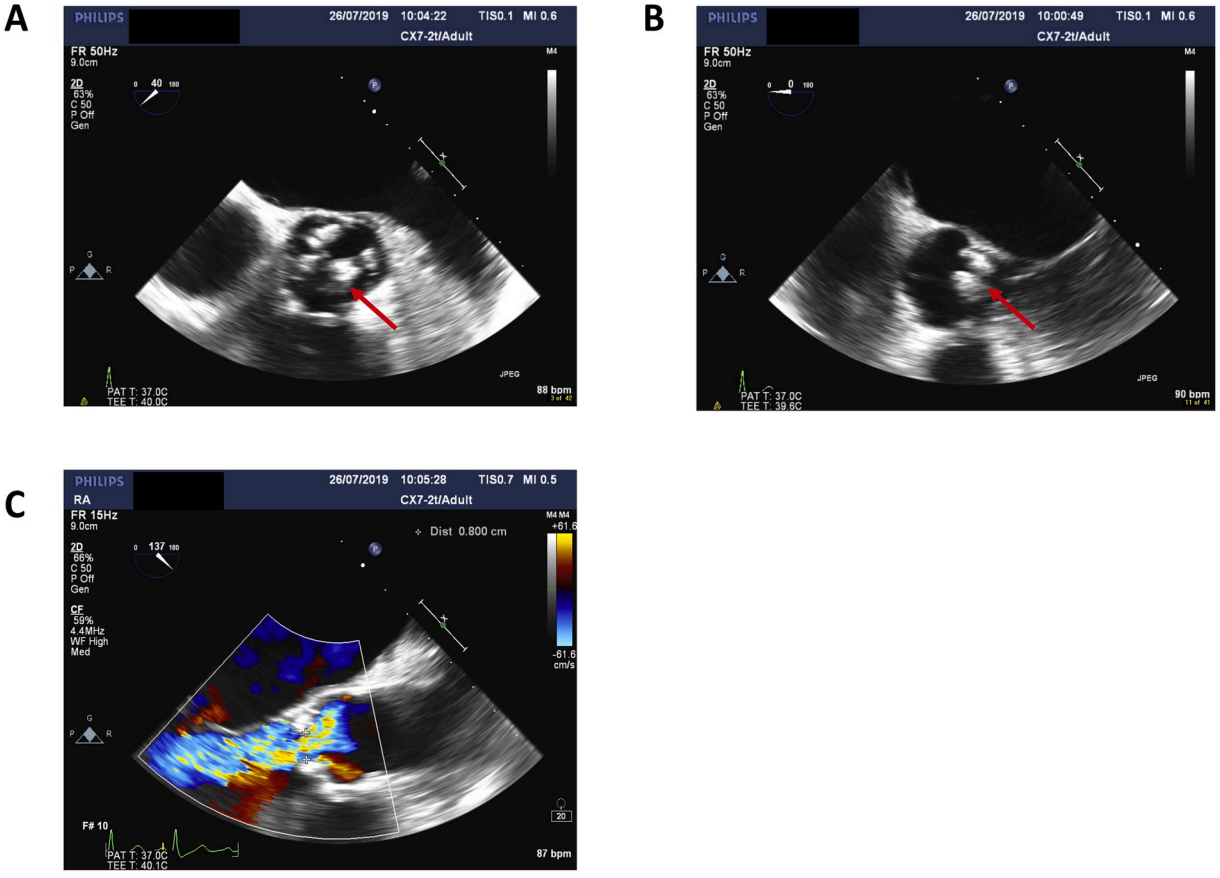

Fig. 2. Transoesophageal echocardiogram images demonstrating large vegetations on the aortic valve cusps (A & B, red arrows) and torrential aortic regurgitation using the colour doppler setting (C). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

to 27% of patients with lactobacillaemia.[4] This predisposition could have led to the transition of *L. jesenii* from a normal commensal organism to the cause of a bacteraemia depositing a vegetation on an otherwise normal aortic valve.

There is only one other report of lactobacillaemia in a patient with ureteric obstruction in the literature, published by Chazan et al., 2008.[5] Unlike the present case, the obstruction was unilateral and the patient presented with the typical symptoms and signs of ureteric colic rather than the diagnosis being made incidentally in an otherwise asymptomatic patient. This therefore emphasises the importance of thorough investigation of patients found to have lactobacillaemia, including the use of cross sectional imaging to exclude underlying urinary tract pathology. Furthermore, the management of the patient reported by Chazan et al. also differed in that the patient underwent primary ureteroscopy and stone extraction rather than ureteric stent insertion alone. However, in this case the presence of significant sepsis and cardiac pathology mandated that the intervention be quick, with minimal risk of complications, so as to enable concurrent aortic valve replacement.

Finally, this report also highlights the clinical significance of asymptomatic obstructing urolithiasis. Whilst the prevalence is reported to be relatively low, accounting for 1.1% of 3711 patients over a 12 year period in one published series, the potential for serious complications such as renal failure and sepsis remains high.[1] As such, urological pathology should always be considered when searching for the source of bacteraemia, sepsis and endocarditis of unknown aetiology, even in those patients without typical symptoms. A non-contrast CT of the kidneys, ureters and bladder (CT KUB) is the most sensitive imaging modality for urolithiasis, and if identified, may also give important anatomical information concerning stone size and position.

Conclusion

Asymptomatic urolithiasis may be a rare cause of systemic lactobacillus infection, particularly when accompanied by obstruction. Given the difficulty in interpreting lactobacillus in urine cultures, it is important to treat lactobacillaemia with a high index of suspicion and patients should be investigated thoroughly with cross sectional imaging to look for urinary tract calculi and other predisposing pathologies.

Consent

The patient provided formal written consent for anonymised clinical information and imaging to be included in this manuscript.

Declaration of competing interest

No conflicts of interest to declare.

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